

Comparisons of Job Characteristics

Focus Occupation: [Materials Engineers \(17-2131\)](#)

Associated Occupation: [Architectural and Engineering Managers \(11-9041\)](#)

[Compare Knowledge](#)

[Compare Skills](#)

[Compare Abilities](#)

[Compare Detailed Work Activities](#)

[Compare Tools and Technologies](#)

<<	Focus occupation element is much lower
<	Focus occupation element is lower
0	Focus occupation element is at a similar level
>	Focus occupation element is at a higher level
>>	Focus occupation element is at a much higher level

Knowledge

Similarity of Focus Occupation to Associated Occupation: 73

Focus Occupation: Materials Engineers (17-2131)

Associated Occupation: Architectural and Engineering Managers (11-9041)

Associated Occupation's Key Knowledge Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Engineering and Technology	5.7	23.2	18.9	<<	Extensive education and/or training may be required
Design	5.2	19.0	7.9	<<	Extensive education and/or training may be required
Mathematics	9.2	17.4	11.8	<<	Extensive education and/or training may be required
Computers and Electronics	8.4	16.9	6.7	<<	Extensive education and/or training may be required
Administration and Management	8.4	14.4	7.4	<<	Extensive education and/or training may be required
Physics	4.3	13.0	10.6	<	Expanded education and/or training may be required
Building and Construction	4.0	10.7	3.6	<<	Extensive education and/or training may be required
Production and Processing	6.0	10.7	8.1	<<	Extensive education and/or training may be required
Personnel and Human Resources	5.6	10.4	2.9	<<	Extensive education and/or training may be required
Economics and Accounting	4.4	8.1	1.9	<<	Extensive education and/or training may be required
Telecommunications	3.9	7.4	1.6	<<	Extensive education and/or training may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Skills

Similarity of Focus Occupation to Associated Occupation: 82

Focus Occupation: Materials Engineers (17-2131)

Associated Occupation: Architectural and Engineering Managers (11-9041)

Associated Occupation's Key Skills Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Operations Analysis	5.0	13.9	11.7	<	A higher skill level may be required
Coordination	9.1	13.3	9.1	<<	Extensive development of skills in this area may be required
Complex Problem Solving	9.1	13.0	12.0	0	Current skill level may be sufficient
Time Management	8.9	12.8	9.5	<<	Extensive development of skills in this area may be required
Management of Personnel Resources	6.9	12.2	8.7	<<	Extensive development of skills in this area may be required
Mathematics	6.2	11.7	9.1	<	A higher skill level may be required
Systems Analysis	6.5	10.7	8.9	<	A higher skill level may be required
Systems Evaluation	6.4	10.7	8.7	<	A higher skill level may be required
Negotiation	6.8	10.2	7.5	<<	Extensive development of skills in this area may be required
Management of Financial Resources	3.3	9.7	4.3	<<	Extensive development of skills in this area may be required
Management of Material Resources	3.7	9.2	5.3	<<	Extensive development of skills in this area may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Abilities

Similarity of Focus Occupation to Associated Occupation: 97

Focus Occupation: Materials Engineers (17-2131)

Associated Occupation: Architectural and Engineering Managers (11-9041)

Associated Occupation's Key Abilities Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Written Comprehension	11.0	15.2	14.2	0	Current ability level may be sufficient
Oral Comprehension	12.5	15.0	14.1	0	Current ability level may be sufficient
Deductive Reasoning	10.6	13.9	14.2	0	Current ability level may be sufficient
Problem Sensitivity	11.1	13.9	14.7	0	Current ability level may be sufficient
Written Expression	9.8	13.8	13.8	0	Current ability level may be sufficient
Mathematical Reasoning	6.3	13.3	10.2	<<	Extensive improvement in abilities may be required
Information Ordering	9.9	12.0	11.5	0	Current ability level may be sufficient
Category Flexibility	9.0	11.4	11.5	0	Current ability level may be sufficient
Number Facility	6.3	11.2	9.2	<	Some improvement in abilities may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Activities that Both Occupations Have in Common

Similarity of Focus Occupation to Associated Occupation: 79

Focus Occupation: Materials Engineers (17-2131)
Associated Occupation: Architectural and Engineering Managers (11-9041)

Work Activities	Exclusivity of Activity
Advise clients or customers	19
Advise clients regarding engineering problems	67
Analyze project proposal to determine feasibility, cost, or time	69
Communicate technical information	4
Confer with engineering, technical or manufacturing personnel	25
Coordinate engineering project activities	71
Delegate authority for engineering activities	73
Develop policies, procedures, methods, or standards	21
Direct and coordinate activities of workers or staff	3
Estimate cost for engineering projects	69
Evaluate costs of engineering projects	70
Evaluate engineering data	60
Lead teams in engineering projects	73
Perform statistical analysis in physical science or geological research	71
Plan testing of engineering methods	72
Prepare reports	8
Prepare technical reports or related documentation	22
Read blueprints	10
Read technical drawings	7
Resolve engineering or science problems	46
Understand engineering data or reports	48
Use intuitive judgment for engineering analyses	72
Use long or short term production planning techniques	74
Use pollution control techniques	62
Use project management techniques	47
Use scientific research methodology	21
Use technical regulations for engineering problems	61
Write business project or bid proposals	48

Not all positions in these occupations will necessarily perform all of the listed activities. The exclusivity rating is an indication of how unique the activity is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations engage in that activity.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Tools and Technologies that Both Occupations Have in Common

Similarity of Focus Occupation to Associated Occupation: 66

Focus Occupation: Materials Engineers (17-2131)
Associated Occupation: Architectural and Engineering Managers (11-9041)

Tools and Technologies	Exclusivity
Autoclave and sterilizer equipment and accessories	12
Business function specific software	1
Chromatographic measuring instruments and accessories	16
Computer data input devices	2

Computers	1
Content authoring and editing software	1
Data management and query software	1
Electrochemical measuring instruments and accessories	9
General laboratory glassware and plasticware and supplies	13
Indicating and recording instruments	2
Industry specific software	1
Information exchange software	1
Laboratory decanting and distilling and evaporating and extracting equipment and supplies	19
Laboratory enclosures and accessories	17
Laboratory heating and drying equipment	13
Network applications software	1
Pressure measuring and control instruments	10
Safety apparel	4
Spectroscopic equipment	10
Temperature and heat measuring instruments	6
Viewing and observing instruments and accessories	4
Vision protection and accessories	3
Water treatment and supply equipment	21

Not all positions in these occupations will necessarily use all of the listed tools and technologies. The exclusivity rating is an indication of how unique the tool or technology is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations use that tool or technology.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.